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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NGUYEN, HOANG V	

ART UNIT	PAPER NUMBER
2821	

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/814,367	TAN ET AL.	
	Examiner	Art Unit	
	Hoang V. Nguyen	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/20/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments filed 30 November 2005 have been fully considered but they are not persuasive.

2. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 4-13 and 15-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pankinaho et al (US 6,693,594 B2) in view of Pankinaho (US 6,140,966).

Regarding claim 1, Pankinaho '594 (Figures 3 and 4) discloses a radio communications device comprising a ground plane 402; a radio frequency radiator element 101 having a plurality of edges including a first edge and a second edge; a feed point 404 electrically coupling the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element; a first ground connector 411 electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first contact point of the radio frequency radiator element; a switching unit 422; and a second ground connector 421 selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the second ground connector electrically coupling the

radio frequency radiator element at a second ground contact point of the radio frequency radiator element, wherein in use the switching unit selectively couples the frequency radiator element to the ground plane depending upon desired operating frequency bands for the radio frequency radiator element. It is inherent that the radio communication device of Pankinaho to also include a radio frequency communications circuitry coupled to a processor in order to render the radio communications device operational.

Pankinaho '594 fails to teach that the feed contact point being spaced from all of the edges to the radio frequency radiator element. Pankinaho '966 (Figure 1) discloses a radio communications device comprising a radio frequency radiator element having a feed contact point 110 being spaced from all of the edges to the radio frequency radiator element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the Pankinaho '594 radio communications device with the feed contact point configuration of Pankinaho '966, doing so would alter the frequency characteristics of the Pankinaho '594 antenna since selecting a particular position of the feed point relative to an edge of an antenna patch determines the input impedance of the antenna.

Regarding claim 2, as applied to claim 1, Figure 4 of Pankinaho '594 shows that the first ground contact is proximal to the first or front edge of the radio frequency radiator element.

Regarding claim 4, as applied to claim 1, Figure 4 of Pankinaho '594 shows that the feed contact point 404 and second ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 selectively couples the passive radiator element to the ground plane 402 through the switching unit 422, the

impedance of the radio frequency radiator element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 5, as applied to claim 1, Figure 4 of Pankinaho '594 shows that the feed contact point 404 and first ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, and the first ground connector 411 is electrically coupling the radio frequency radiator element to the ground plane, the impedance of the radio element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 6, as applied to claim 1, Pankinaho '594 (col 6, lines 1-6) teaches a configuration such that the first ground connector provides a permanent electrical coupling of the radio frequency radiator element to the ground plane, and wherein when the second ground connector electrically couples the radio frequency radiator element to the ground plane through the switching unit, the first ground connector also electrically couples radio frequency radiator element to the ground plane.

Regarding claims 7 and 8, as applied to claim 1, Pankinaho '594 (col 4, lines 5-33) teaches that the radio frequency radiator element can provide resonant frequencies of substantially 850 MHz, 1800 MHz, 900 MHz and 1900 MHz.

Regarding claim 9, as applied to claim 1, Pankinaho '594 teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the ground plane has a longer effective length than when the "second" ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 10, as applied to claim 1, Pankinaho '594 teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the effective length between the feed contact point 404 and the ground plane 402 is increased compared when the second ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 11, as applied to claim 1, it would be inherent that the switching unit 422 is coupled to, and operatively controllable by, the radio communications circuitry such that the radio radiator element can operate at different resonant frequencies.

Regarding claim 12, Pankinaho '594 (Figures 3 and 4) discloses a radio communications device comprising a ground plane 402; a radio frequency radiator element 101; a feed point 404 electrically coupling the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element; a first ground connector 411 electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first contact point of the radio frequency radiator element; a switching unit 422; and a second ground connector 421 selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, the second ground connector electrically coupling the radio frequency radiator element at a second ground contact point of the radio frequency radiator element. It is inherent that the radio communication device of Pankinaho to also include a radio frequency communications circuitry in order to render the radio communications device operational.

Pankinaho '594 fails to teach that the feed contact point being spaced from all of the edges to the radio frequency radiator element. Pankinaho '966 (Figure 1) discloses a radio communications device comprising a radio frequency radiator element having a feed contact point 110 being spaced from all of the edges to the radio frequency radiator element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the Pankinaho '594 radio communications device with the feed contact point configuration of Pankinaho '966, doing so would alter the frequency characteristics of the Pankinaho '594 antenna since selecting a particular position of the feed point relative to an edge of an antenna patch determines the input impedance of the antenna.

Regarding claim 13, as applied to claim 12, Figure 4 of Pankinaho '594 shows that the first ground contact is proximal to the first or front edge of the radio frequency radiator element.

Regarding claim 15, as applied to claim 12, Figure 4 of Pankinaho '594 shows that the feed contact point 404 and second ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 selectively couples the passive radiator element to the ground plane 402 through the switching unit 422, the impedance of the radio frequency radiator element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 16, as applied to claim 12, Figure 4 of Pankinaho '594 shows that the feed contact point 404 and first ground contact point are coupled at respective locations on the radio frequency radiator element 101 so that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, and the first ground connector 411 is electrically coupling the radio frequency radiator element to the ground plane,

the impedance of the radio element is substantially impedance matched to the radio frequency communications circuitry.

Regarding claim 17, as applied to claim 12, Pankinaho '594 (col 6, lines 1-6) teaches a configuration such that the first ground connector provides a permanent electrical coupling of the radio frequency radiator element to the ground plane, and wherein when the second ground connector electrically couples the radio frequency radiator element to the ground plane through the switching unit, the first ground connector also electrically couples radio frequency radiator element to the ground plane.

Regarding claims 18 and 19, as applied to claim 12, Pankinaho '594 (col 4, lines 5-33) teaches that the radio frequency radiator element can provide resonant frequencies of substantially 850 MHz, 1800 MHz, 900 MHz and 1900 MHz.

Regarding claim 20, as applied to claim 12, Pannkinaho '594 teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the ground plane has a longer effective length than when the "second" ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 21, as applied to claim 12, Pankinaho '594 teaches that when the second ground connector 421 is electrically isolated from the ground plane 402 by the switching unit 422, the effective length between the feed contact point 404 and the ground plane 402 is increased compared when the second ground connector is electrically coupled to the ground plane by the switching unit.

Regarding claim 22, as applied to claim 12, it would be inherent that the switching unit 422 is coupled to, and operatively controllable by, the radio communications circuitry such that the radio radiator element can operate at different resonant frequencies.

Regarding claim 23, Pankinaho '594 (Figures 3 and 4) discloses a radio communications device comprising a ground plane 402; a radio frequency radiator element 101; a feed point 404 electrically coupling the radio frequency communications circuitry, the feed point physically contacting the radio frequency radiator element at a feed contact point of the radio frequency radiator element; a first ground connector 411 electrically coupling the radio frequency radiator element to the ground plane, the first ground connector electrically coupling the radio frequency radiator element at a first contact point of the radio frequency radiator element; a switching unit 422; and a plurality of further ground connectors 421 and 431 selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit 422 and 432, the plurality of further ground connectors electrically coupling the radio frequency radiator element at respective ground contact points of the radio frequency radiator element. It is inherent that the radio communication device of Pankinaho to also include a radio frequency communications circuitry in order to render the radio communications device operational.

Pankinaho '594 fails to teach that the feed contact point being spaced from all of the edges to the radio frequency radiator element. Pankinaho '966 (Figure 1) discloses a radio communications device comprising a radio frequency radiator element having a feed contact point 110 being spaced from all of the edges to the radio frequency radiator element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the Pankinaho '594 radio communications device with the feed contact point

configuration of Pankinaho '966, doing so would alter the frequency characteristics of the Pankinaho '594 antenna since selecting a particular position of the feed point relative to an edge of an antenna patch determines the input impedance of the antenna.

Regarding claim 24, as applied to claim 23, Figure 4 of Pankinaho '594 shows that the first ground contact is proximal to the first or front edge of the radio frequency radiator element.

5. Claims 3, 14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pankinaho '594 in view of Pankinaho '966, and further in view of Zhou (US 6,466,170).

Pankinaho '594/Pankinaho '966 discloses a radio communications device comprising a processor; radio frequency communications circuitry; a ground plane; a radio frequency radiator element having a plurality of edges; a switching unit; and a plurality of ground connectors selectively electrically coupling the radio frequency radiator element to the ground plane through the switching unit, wherein the first ground contact point is proximal to a first edge of the radio frequency radiator element. Pankinaho 594/Pankinaho '966 fails to further teach that the second ground contact point is proximal to the second edge of the radio frequency radiator element. Zhou (Figure 5) discloses a radio communications device having a configuration having a first ground contact point of the first ground connector 1 being proximal to a first edge of the radio frequency radiator element and a second ground contact point of the second ground connector 4 is proximal to a second edge of the radio frequency radiator element. It would have been obvious to one of ordinary skill in the art a the time the invention was made to employ the Pankinaho '594/Pankinaho '966 radio communications device with Zhou's ground connectors arrangement, doing so would allow tuning of the input impedance at the feed point and for

tuning the resonant frequency of the Pankinaho '594/Pankinaho '966 radio frequency radiator element.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patents 6,421,014 and 6,836,247 disclose an antenna patch having a feed contact point placed away from all the edges.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang V. Nguyen whose telephone number is (571) 272-1825. The examiner can normally be reached on Mondays-Fridays from 8:00 a.m. to 4:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hvn
12/14/05

HOANG V. NGUYEN
PRIMARY EXAMINER